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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,349	10/11/2001	Thomas S. Moore	705699US1	1359

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12/08/2003

Lisa K. Mack
DaimlerChrysler Intellectual Capital Corporation
CIMS 483-02-19
800 Chrysler Drive
Auburn Hills, MI 48326-2757

EXAMINER

THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 12/08/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,349

Applicant(s)

MOORE ET AL.

Examiner

Camie S Thompson

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-- Th MAILING DATE of this communication appears on th cover sh t with th correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-13, 16, 17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-13, 16, 17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Examiner regrets the untimely reopening of prosecution.
2. Applicant's amendment and response under 37 C.F.R. 116 has been acknowledged.
3. Examiner acknowledges cancelled claims 1-4, 14-15 and 18.
4. Examiner acknowledges amended claims 5-7, 12-13, 14-16 and 19-20.
5. The objection to the specification is withdrawn due to applicant's amended abstract.
6. The rejection of claims 1, 2, 6, 10-11, 15, 17 and 19 under 35 U.S.C. 102(b) as being anticipated by Segal et al., U.S. Patent Number 3,920,879 is withdrawn due to applicant's amended claims.
7. The rejection of claims 1, 6-7, 9 and 15 under 35 U.S.C. 102(b) as being anticipated by Moghe et al., U. S. Patent Number 5,127,783 is withdrawn due to applicant's amended claims.
8. The rejection of claims 1,2, 6-8 and 17 under 35 U.S.C. 102(b) as being anticipated by Raley, U.S. Patent Number 4,761,322 is withdrawn due to applicant's amended claims.
9. The rejection of claims 1-4, 6, 12-15, 17 and 20 under 35 U.S.C. 103(a) as being unpatentable over Raley, U.S. Patent Number 4,761,322 in view of Tatarchuck et al., U.S. Patent Number 5,102,745.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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11. Claims 5-8 and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Bompard, U.S. Patent Number 4,257,835.

Bompard discloses densified layers of fibers that are at right angles to each other as per instant claim 5 (see abstract and column 1, lines 5-18). Additionally, the Bompard reference discloses that the fibers can be carbon fibers and that the stacked layers of densified fibers are constituted by parallel fibers in at least first and second directions as per instant claims 5 and 6 (see column 1, lines 15-68). Also, Bompard discloses in column 3, lines 54-59 that the fibrous layers are orthogonal to each other as per instant claim 5. The reference also discloses that a reinforced composite is produced from impregnating the fibers in a thermosetting resin such as an epoxy resin or phenolic resin as per instant claims 7 and 8 (see column 2, lines 45-59). Using carbon fibers in an epoxy resin would produce an aspect ratio of less than 5, as this is a physical property of the fibers in the resin matrix as per instant claims 12 and 13. Therefore, this feature is inherent.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bompard, U.S. Patent Number 4,257,835 in view of Moghe et al., U.S Patent Number 5,127,783. Bompard discloses densified layers of fibers that are at right angles to each other as per instant claim 5 (see abstract and column 1, lines 5-18). Additionally, the Bompard reference discloses

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that the fibers can be carbon fibers and that the stacked layers of densified fibers are constituted by parallel fibers in at least first and second directions as per instant claim 5 (see column 1, lines 15-68). Also, Bompard discloses in column 3, lines 54-59 that the fibrous layers are orthogonal to each other as per instant claim 5. The reference also discloses that a reinforced composite is produced from impregnating the fibers in a thermosetting resin as per instant claim 7 (see column 2; lines 45-59). The Bompard reference does not disclose the use of a thermosetting resin such as a polyimide resin. Moghe teaches carbon fiber reinforced composites wherein the carbon fibers can be twisted/coupled (see column 3, lines 42-68 and claim 19). In addition, the Moghe reference teaches that the binder system include a resin such a polyimide resin as per instant claims 7 and 9 (see column 7, lines 21-46). Polyimide resins function below their decomposition temperature. Therefore, it would have been obvious to one of ordinary skill in the art to use a polyimide resin as the thermosetting resin because polyimide resins volatilize and leave no carbon char (see Moghe: column 7, lines 21-46).

14. Claims 5, 10-11, 16-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bompard, U.S. Patent Number 4,257,835 in view of Segal et al., U.S. Patent 3,920,879.

Bompard discloses densified layers of fibers that are at right angles to each other as per instant claim 5 (see abstract and column 1, lines 5-18). Additionally, the Bompard reference discloses that the fibers can be carbon fibers and that the stacked layers of densified fibers are constituted by parallel fibers in at least first and second directions as per instant claim 5 and 17 (see column 1, lines 15-68). Also, Bompard discloses in column 3, lines 54-59 that the fibrous layers are orthogonal to each other as per instant claim 5. Bompard does not disclose the use of a

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thermoformable polymer matrix such as polyamide resin. Segal teaches long glass fiber reinforcement wherein the fibers are intertwined or agglomerated long glass fibers held together by adhesive resinous binders or mechanically bound as per instant claim 16(see abstract and column 4, lines 16-44). In addition, the Segal reference discloses that the polymer used in the reinforcement is polyamide as per instant claims 10 and 11 (see column 4, lines 16-44).

Polyamide resins are low molecular weight resins. Therefore, it would have been obvious to one of ordinary skill in the art to use a polyamide resin in order obtain a mold that is shapable with higher strengths as taught by Segal in column 5, lines 1-19.

The Bompard reference does not disclose the length of the fiber as per instant claim 19. Segal teaches high aspect ratio fibers such as glass fibers that have a length of 2 to 5 inches or longer (see column 3, lines 26-36). The length of the fibers affects the strength. Therefore, it would have been obvious to one of ordinary skill in the art to have the length of the fibers between 0.2 to 0.8 mm in order to have an effective load bearing strength as taught by Segal in column 3, lines 26-36.

Neither reference discloses the diameter of the fiber as per instant claim 20. The diameter of the fibers affects the load bearing features of the composite. Discovery of optimum values of result effective variable involves only routine skill in the art in re Boesch, 617 F2. 2d 272, 205 USPQ 215 (CCPA). Therefore, it would have been obvious to one of ordinary skill in the art to have a diameter of five to twenty micrometers for the fibers in order to obtain a composite with a more efficient load bearing properties.

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Response to Arguments

15. Applicant's arguments with respect to claims 5-13, 16-17 and 19-20 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (703) 305-4488. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly, can be reached at (703) 308-0449. The fax phone number for the Group is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

COMMUNICATIONS SECTION
SUPERVISOR
CYNTHIA H. KELLY

Cynthia H. Kelly